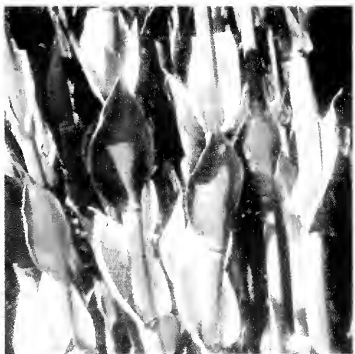


RIES



# REEDS RESTIOS

Brown, Jamieson and Botha

582.554  
BRO



SOUTH AFRICAN

national  
biodiversity  
institute

S A N B I

## Acknowledgements

The authors thank Caroline Voget and Anthony Hitchcock for valuable comments on the original manuscript and Jenny Jay for her enthusiastic support in bringing the *Kirstenbosch Gardening Series* into print.

Technical Editor: Anthony Hitchcock

General Editor: Caroline Voget

Design: David Davidson Design Solutions

Gardening Series Co-ordinators: Neville Brown and Graham Duncan

Published by the South African National Biodiversity Institute, Kirstenbosch,  
Private Bag X7, Claremont, 7735, South Africa.

Copyright © 1998 National Botanical Institute, Cape Town

No part of this publication may be reproduced without the prior permission of  
the copyright owners.

Copyright © 2nd Edition: South African National Biodiversity Institute,  
Kirstenbosch, Private Bag X7, Claremont, 7735, South Africa.

2004

ISBN 1-919684-42-5

Reproduction and Printing by Elements, Cape Town

Kirstenbosch Gardening Series

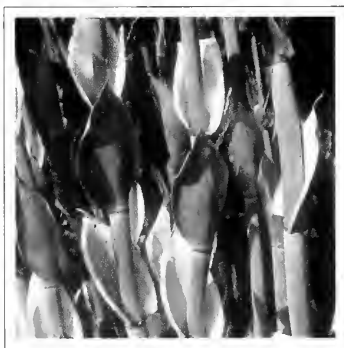
MARY GUNN LIBRARY



0000025899

South African National  
Biodiversity Institute

# GROW RESTIOS



**A GUIDE TO THE PROPAGATION AND CULTIVATION  
OF SOUTH AFRICAN RESTIOS**

Text by Neville Brown, Hanneke Jamieson and Philip Botha  
Photographs by Neville Brown and Jeanette Loedolff

582.554 BRO

8244

22/02/2005

*Rhodocoma capensis* (right)  
and *Elegia peristens* (below) in  
the Kirstenbosch Restio Garden





# CONTENTS

Introduction 5

The Kirstenbosch  
Restio Garden 9

Economic uses 11

Propagation 13

- Vegetative propagation
- Propagation from seed
- How to germinate restio seed
- Germination response of restio  
species to plant-derived smoke

Cultivation 17

- How to grow restios
- Mulching
- Maintenance
- Companion plants
- Containers

A guide to restios  
in cultivation 21

- Identification
- Better known species
- New restios with horticultural  
potential

Restios in cultivation: a  
summary of characteristics 28

Kirstenbosch seeds and seed  
primer by mail order 30

Availability of restio plants 30

Further reading 31

Index 32



Display bed with *Rhodocoma  
foliosa* in front and *Calopsis  
paniculata* behind

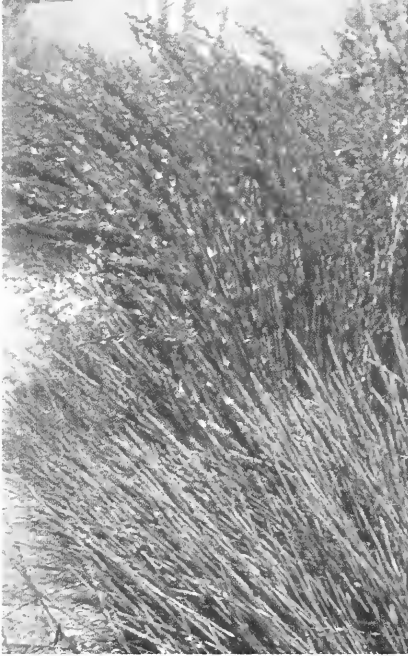


## INTRODUCTION

The Restionaceae, a family of evergreen rush-like plants, is one of the three major families defining fynbos, the characteristic vegetation type of the Cape Floristic Region. During the last ten years restios have attracted considerable interest from gardeners around the world. Plants of two other characteristic fynbos families, the Proteaceae and Ericaceae, have been cultivated in South Africa and the rest of the world for many years and now form an important part of the cut-flower trade in South Africa, Kenya, Australia, New Zealand and the U.S.A. At present only a few restio species are produced commercially and these can be seen in private gardens and in street-side plantings. For some time Kirstenbosch has been working to introduce a greater range of restios to the gardening public.

Restios do not produce the striking flowers found in the protea and erica families, but have been sought after for their sculptural form and attractive long-lasting seed heads. They are found mostly in poor sandy soils from near sea level to high above the snow line.

The best known restios are *Thamnochortus insignis*, *Chondropetalum tectorum* and *Elegia capensis*, all of which form elegant tussocks up to 2m high. Planted in the right positions they are tough, long-lived plants, ideal for



three in New Zealand, one in Malaysia and south-east Asia and one in Chile. In Africa about 300 species are endemic to the Cape Floristic Region and a few species occur further north in South Africa, with one species reaching Zaire and one occurring in Madagascar. Approximately 57 (19 %) of the Cape species are considered threatened in the wild.

John Winter, a former Curator of Kirstenbosch, had for a long time been convinced of the horticultural potential of Cape restios. He realised that to fulfil this potential, seed of a larger range of species had to be available and germination problems had to be solved. With his support Kirstenbosch horticulturists embarked on an intensive seed collecting programme from plants in the wild and over a number of years successfully assembled seed of a relatively wide range of species. At about the same time, Kirstenbosch researchers discovered that plant-derived smoke is an important natural cue for seed germination in the fynbos and particularly important for plants in the restio family. For the first time, plants of species that had previously been difficult or impossible to propagate from seed could be produced, in large numbers. This combination of events enabled the creation of a special section in Kirstenbosch to provide a unique showcase for South African restios.

low-maintenance gardening. Restios are generally tufted, reedy-looking plants that vary in height from about 200mm to well over 3m and can be used singly as accent plants or in groups as foliage plants. Some of the species are also used as foliage for the cut-flower industry and the 'thatching reed', *Thamnochortus insignis*, supports a flourishing thatching industry. Some restios have large, loosely branched, grass-like inflorescences which are golden brown and most restios have dark brown seed heads. Apart from their form, the most attractive feature of the restios are the beautiful papery bracts which vary in colour from pale gold to orange red, brown and ebony.

Members of the Restionaceae family are largely confined to the Southern Hemisphere. There are approximately 320 species in Africa, about 100 in Australia,

Above left: Golden brown flower heads of *Elegia persistens*

Right: Tall plants of *Cannomois virgata*, at back with *Elegia racemosa* in middle, and *Askidiosperma andreaeaeum*, in foreground

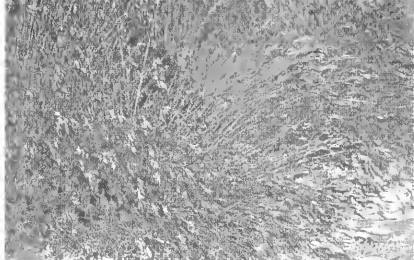




Left: Display bed in the Restio Garden at Kirstenbosch

Right: *Thamnochortus lucens*

Below: *Elegia stipularis* in front, *Restio festuciformis* (left background) and *Elegia persistens* (right background) at the entrance to the Restio Garden



## THE KIRSTENBOSCH RESTIO GARDEN

The Restio Garden was designed to create public awareness of members of this family and to serve as a trial area for the selection of species with horticultural potential. It also provides a refuge for threatened species and seed for research and for distribution to gardeners and the horticultural trade around the world.

The first two beds in the Restio Garden were planted during 1992 and the restios planted include the genera *Askidiosperma*, *Calopsis*, *Chondropetalum*, *Dovea*, *Elegia*, *Ischyrolepis*, *Restio*, *Rhodocoma*, *Staberoha* and *Thamnochortus*, with a few plants of the nut-fruited *Willdenowia* and *Cannomois*. As soon as the dormancy problems with the nut-fruited species are solved, more of these striking plants will be on display. Their more sculptural forms will provide a striking contrast with the softer silhouettes of *Calopsis*, *Ischyrolepis* and *Elegia* species. A few plants of the largest restio species, *Cannomois virgata* or 'bergbamboos', a beautiful bamboo-like plant with stems up to 3m high, can be seen in one of the beds planted during 1992. Of the smaller plants *Restio festuciformis* (a threatened species) stands out with its bright green stems and golden brown inflorescences, flowering already in the second year after sowing. The variety in growth-form, texture and colour of the



restios makes this a very exciting group of plants to introduce to the local gardening public and to world horticulture.

Plants in this unique garden are growing extremely well and a number of species are showing great potential as garden subjects. The Restio Garden provides an attractive new landscaped feature for the increasing numbers of visitors making use of the Rycroft Gate at Kirstenbosch. It also makes it possible to view the new restios in cultivation and to gather information on the growth rate, the flowering times and the general habit of the plants. It has already become apparent that plants of some restios in cultivation look very different from those of the same species growing in the wild.

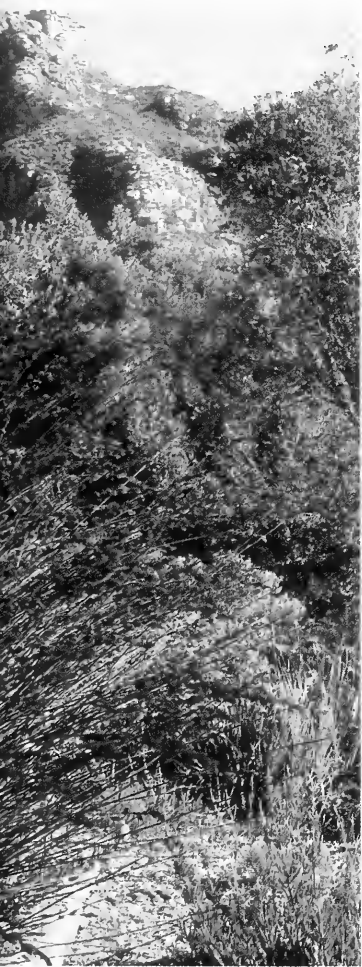
During 1994, two years after the first seedlings were planted out, it was possible to harvest seed from some of the more attractive species in the garden for the first time. There was enough seed not only to

supply seedlings for further garden displays at Kirstenbosch, but also for release to the commercial nursery trade. Some of the wholesale nurseries in South Africa have taken up the option of growing these new species and plants are available for sale to the public at the Kirstenbosch Garden Centre.



Opposite: *Elegia capensis*

Below: A fine specimen of  
*Thamnochortus insignis* at  
Kirstenbosch



## ECONOMIC USES

**Thatching** Restios have been used as an excellent thatching material from the time the first settlers arrived in the country. Several species were used with *Thamnochortus insignis*, *T. spicigerus* and *Chondropetalum tectorum* being the most suitable. After falling into relative disuse for many years, high insurance costs being a major factor, the introduction of better fire-proofing has led to a revival of the use of thatch. Growing *Thamnochortus insignis* has become economically important on the marginal farmlands of the southern Cape.

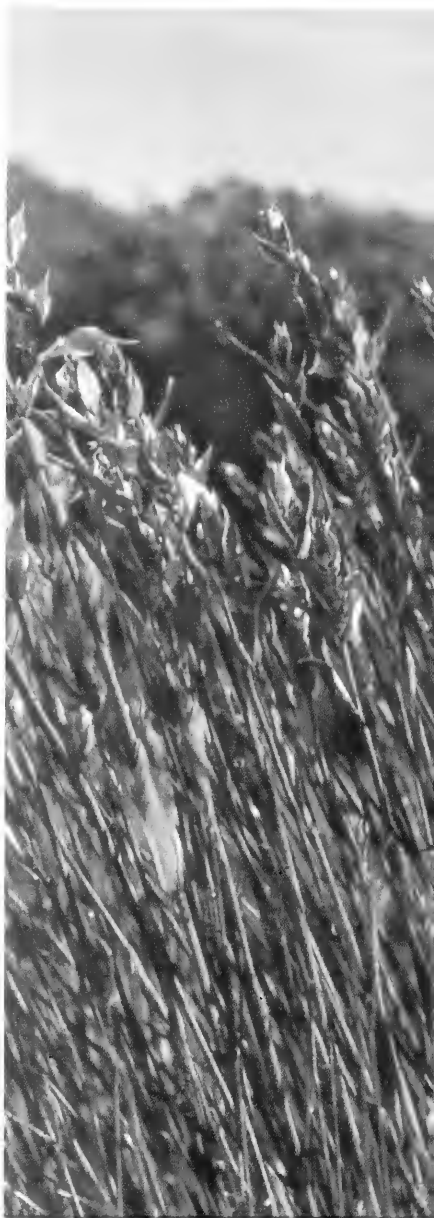
**Broom manufacture** There is also a much smaller industry using various species of restios for the manufacture of brooms. In contrast to the restios used for thatching, which have to be tall and unbranched, the species used for brooms are much shorter, branched and wiry. *Calopsis paniculata* is used in the Eastern Cape and *Cannomois virgata*, *Ischyrolepis gaudichaudiana* and *Elegia stipularis* are used in the Western Cape.

**Wildflower industry** The foliage and dried inflorescences of many different species are used by this industry. Up until now restios have been harvested from wild populations under licence. Some of the species collected from the veld are *Elegia capensis*, *Ischyrolepis subverticillata*, *Thamnochortus insignis*, *Restio bifarius* and *Ceratocaryum argenteum*.



Seeds of restio species show considerable variation in size. Top right, *Chondropetalum tectorum*, top left, *Thamnochortus insignis*, bottom, *Cannomois virgata*.

Right: *Elegia equisetacea* in flower.



Graham Duncan



## PROPAGATION

### **Vegetative propagation**

Restios can be propagated by seed or vegetatively by division. The stoloniferous species can be most successfully divided just before the crop of new shoots emerges from the ground, generally in early or midwinter. The plants should be divided into fairly large pieces, the roots disturbed as little as possible, and planted out immediately in the open ground or in containers. After transplanting, the plants should be kept well-watered until the new shoots are growing and the plant has 'taken'. Generally the plants take up to a year to start growing again and do not seem to grow as vigorously as plants raised from seed.

### **Propagation from seed**

Restios are wind pollinated and many flower during spring or late summer, producing seed after a period of 6 to 11 months. The seed varies from very fine seed like *Chondropetalum tectorum*, with about 10 000 seeds per g to the large nut-like seeds of *Cannomois virgata* with 4 seeds per g. (See picture on page 12 and table on page 15)

Seed collection is fraught with difficulties as there is very little information available for individual species on the season of flowering, on the period required for seed maturation and on the timing of seed drop.



Dramatic effect of smoke treatment in stimulating germination of *restio* seeds.

Left, Seed trays watered with aqueous smoke solution, centre, Seed trays smoked in tent, right, Control seed trays watered with distilled water.

Right: Seedlings of *Restio dispar*.

Seeds of many species look ripe from the outside but on dissection are found to be green and immature.

### How to germinate *restio* seed

Seeds may be sown in trays using a sowing medium consisting of loam, composted milled pine bark and industrial sand in the proportion of 1:2:2. Seeds should be covered with a thin layer of milled bark. Seeds of most species are dormant and will not germinate easily unless dormancy is broken by treatment with smoke derived from burning plant material. Seeds may be smoke-treated in a smoke tent for 30 minutes after sowing in trays. Alternatively, seeds may be pre-treated by soaking them in one of the commercial smoke seed primers for 24 hours prior to sowing. The seed primers contain smoke derivatives that break seed



Hamreke Jamieson

dormancy and maximize germination. Under natural condition seeds germinate in the autumn and early winter after a fire. The removal of the vegetative cover by the fire results in more marked fluctuations in soil temperatures during the day and night. Temperatures of approximately 20-25°C (day) and 8-10°C (night) are ideal. Seed trays housed in an open shade house in the autumn should obtain sufficient diurnal temperature fluctuation for germination to occur. Seeds take 4 to 6 weeks to germinate. In some nut-fruited species

## Germination response of restio species to plant-derived smoke

Key to responses:

- ★★★ indicates very marked increase in germination (<1000%)
- ★★ indicates marked increase in germination (<100%)
- ★ indicates moderate increase in germination (50-100%)
- NR no response to smoke; all nut-fruited species; seeds remain dormant; other germination cues probably involved

Seed Size: (seeds / g) Figures in brackets after each species name

|                                     |              |                                  |             |
|-------------------------------------|--------------|----------------------------------|-------------|
| <i>Askidiosperma andreaeanum</i>    | ★★           | <i>Restio bifarius</i>           | (304) ★     |
| <i>Askidiosperma esterhuyseniae</i> | (1 219) ★    | <i>Restio brachiatus</i>         | (2 000) ★★  |
| <i>Askidiosperma paniculatum</i>    | (373) ★★     | <i>Restio dispar</i>             | (290) ★★    |
| <i>Calopsis paniculata</i>          | (3 333) ★    | <i>Restio festuciformis</i>      | (4 147) ★★  |
| <i>Cannomois parviflora</i>         | (27) NR      | <i>Restio pachystachyus</i>      | (340) ★     |
| <i>Cannomois virgata</i>            | (4) ★★       | <i>Restio similis</i>            | (10 000) ★★ |
| <i>Ceratocaryum argenteum</i>       | (9) NR       | <i>Restio tetragonus</i>         | ★★★         |
| <i>Chondropetalum ebracteatum</i>   | (794) ★★     | <i>Restio triticeus</i>          | (1 136) ★★  |
| <i>Chondropetalum hookerianum</i>   | (859) ★★★    | <i>Rhodocoma arida</i>           | (1 149) ★   |
| <i>Chondropetalum mucronatum</i>    | (248) ★★★    | <i>Rhodocoma capensis</i>        | (5 263) ★★★ |
| <i>Chondropetalum tectorum</i>      | (10 550) ★★★ | <i>Rhodocoma fruticosa</i>       | (961) ★★    |
| <i>Dovea macrocarpa</i>             | (90) ★★      | <i>Rhodocoma gigantea</i>        | (725) ★★★   |
| <i>Elegia capensis</i>              | (2 010) ★    | <i>Staberoha aemula</i>          | (602) ★★★   |
| <i>Elegia cuspidata</i>             | (706) ★★     | <i>Staberoha cernua</i>          | (911) ★★★   |
| <i>Elegia equisetacea</i>           | (1 250) ★★   | <i>Staberoha distachyos</i>      | ★★          |
| <i>Elegia fenestrata</i>            | ★★           | <i>Staberoha vaginata</i>        | (568) ★★    |
| <i>Elegia filacea</i>               | (2 200) ★★   | <i>Thamnochortus bachmannii</i>  | (9080) ★★★  |
| <i>Elegia grandis</i>               | (64) ★       | <i>Thamnochortus cinereus</i>    | (1 010) ★★★ |
| <i>Elegia persistens</i>            | (909) ★      | <i>Thamnochortus pellucidus</i>  | (350) ★★★   |
| <i>Elegia stipularis</i>            | ★            | <i>Thamnochortus platypteris</i> | (408) ★★    |
| <i>Hypodiscus neesii</i>            | (21) NR      | <i>Thamnochortus punctatus</i>   | ★★★         |
| <i>Hypodiscus striatus</i>          | (22) NR      | <i>Thamnochortus spicigerus</i>  | (385) ★★★   |
| <i>Ischyrolepis ocreata</i>         | (460) ★★     | <i>Thamnochortus sporadicus</i>  | ★★          |
| <i>Ischyrolepis sieberi</i>         | (383) ★★★    | <i>Willdenowia incurvata</i>     | (8) NR      |
| <i>Ischyrolepis subverticillata</i> | (538) ★★★    |                                  |             |

a pre-germination storage treatment at 18–28°C for several weeks gives improved germination and others will germinate if incubated moist at 18–28°C. In general, germination cues for nut-fruited restios

require further study. Seedlings should be transferred to small individual containers and grown in the nursery until they reach a size suitable for planting out in the open ground.



Stems of *Cannomois virgata*

Right: Display bed with, front, newly planted *Elegia capensis*; centre, brown bracts of *Elegia cuspidata*, single plant of taller *Calopsis paniculata* to left, and *Restio festuciformis*; in the middle distance





## CULTIVATION

### **How to grow restios**

The normal growing season for restios is in the autumn, spring and early summer. The best time to plant restios in both the summer and winter rainfall areas is at the beginning of the rainy season. The plants are planted in holes of 0.6m square and 0.4 to 0.6m deep. The soil that is removed from the planting hole should be well mixed with about two spades of compost and then replaced in the planting hole. It is recommended that no fertilizer be added as this might burn the roots. The plants should be planted at the same level as they were in the bags. They must be well watered after planting and after about six weeks they should show signs of new growth. Restios, in common with other fynbos species like proteas, do not like to have their roots disturbed and do not like to be planted in small holes in lawns. They are, however, more robust growers than most fynbos plants and do not seem to be plagued by soil-born fungi or other diseases.

The main requirements for successfully growing restios are full sun, a well-drained soil and plenty of air movement. Restios will respond well to regular feeding with low concentrations of nutrients, such as found in granular slow release fertilizers containing nitrogen, phosphate and potassium. They may be fed with standard



Above: Display beds with planted seedlings – *Elegia capensis* (back left), *E. cuspidata* (front) and *Restio festuciformis* (right)

Street planting of *Thamnochortus insignis*. Plants cut back towards the outside of tuft to allow new growth from the centre.

organic fertilizers such as Seagrow or Kelpak or by sprinkling the surrounding soil with a small amount of ammonium sulphate during the growing season. Restios respond well to regular watering by producing lush and robust growth. Most species will, however, tolerate periods of drought, as they are adapted to a long dry season.

### Mulching

Like most other fynbos plants, restios will benefit from a mulch of milled pine bark or rough compost. The mulch keeps the roots cool, reduces water evaporation and inhibits weed growth.

### Maintenance

Maintenance consists of the removal of dead stems from the stoloniferous species, like *Elegia capensis* and *Calopsis paniculata*, where the dead stems can be removed every year or two. The dead stems of the more tufted species like *Thamnochortus insignis*, *Chondropetalum tectorum* and *Restio festuciformis* need not be removed. These species produce

a new crop of stems in the centre of the plant and push the older stems outward and to the ground. The old, dead stems will be more or less covered by the green stems and need not be removed. In some street plantings, plants have been pruned to remove the old outer stems, while leaving the new crop of stems to grow out unhindered from the centre. (See photograph on opposite page).

### Companion plants

Restios may be grown as accent plants in a border or they can be grown in large groups where the rippling movement caused by the wind makes them particularly attractive. As one of the main components of fynbos vegetation, restios look very attractive when planted with proteas and ericas. Companion plants for smaller plantings of restios or for single plants could be *Pelargonium betulinum* or *Geranium incanum* with their lilac flowers, *Chironia laxa* with its large purple flowers, *Helichrysum cymosum* with grey green small leaves, *Limonium perigrinum* with lacy bright pink flowers and the striking grey-leaved *Plecostachys serpyllifolia*.

### Containers

The medium and smaller tufted species, such as *Elegia stipularis* and *Thamnochortus pellucidus*, are very effective in pots. *Chondropetalum tectorum* with its arching growth is most attractive when planted in larger containers. Other species are worth trying in containers provided these are big enough to allow the roots to spread.

Right above: *Restio brachiatus*

Right: *Pelargonium betulinum* can be grown as a companion plant



Opposite above: *Cannomois virgata* (female). Seeds being shed from dry inflorescences.

Opposite below: *Cannomois virgata* (male). This tall restio has great potential. Few seeds germinate however, and Kirstenbosch staff are working to solve this problem.

Below: Mature plant of *Chondropetalum tectorum*.





## A GUIDE TO RESTIOS IN CULTIVATION

### Identification

Restios have male and female flowers on separate plants and these male and female plants of one species can look very different. This makes identification difficult, because both male and female specimens have to be collected to make the identification possible. In a field with more than one restio species it is not always obvious which male and female plants belong together. The small flowers are borne in compound, loosely branched inflorescences. The male flowers are more widely spaced and loosely arranged. The female flowers, on the other hand, are compact and protected within the often striking golden or brown bracts.

### Better known species

*Chondropetalum tectorum* (dakriet) This species is found from Clanwilliam in the west to Port Elizabeth in the Eastern Cape, growing in damp localities and along ditches. It has a tufted growth form and grows to a height of 1.5m with a spread of 1.5 to 3m.

They have slender compact flowering spikes with brown bracts. The flowers appear in autumn (from March to April) and last for about 4 weeks. They have a fast growth rate with a juvenile growth stage of 1.5 years and a lifespan of approximately



Right: Mature plant of  
*Thamnochortus insignis*

Below: Mature plants of *Elegia*  
*capensis*



10 years. The single smooth stems have dark brown sheaths.

The name *tectorum* meaning 'roofing' suggests that they were once used as a thatching reed, but at present they are not exploited commercially. They are widely planted in gardens, being one of the few restios that have been available from nurseries for some years. There are large stands in Kirstenbosch.

***Thamnochortus insignis* (dekriet, thatching reed)** This species comes from the Caledon and Bredasdorp districts. They are upright tufted plants growing up to



2.5m in height and spreading from 3 to 4m wide. They have heavily lignified stems which are ideal for thatching. The spikelets are 0.15 to 0.7m long and yellow or golden brown in colour. Flowering occurs in summer from January to February and lasts for about 4 weeks. Plants have a fast growth rate. They have a juvenile period of 1.5 years and a lifespan of approximately 30 years. The leaf sheaths are brown and on single smooth stems. They are very attractive ornamental plants that can be grown in rockeries and in open beds. They also make good plant for a large container. They thrive in sandy soils with moisture conditions ranging from moist to relatively dry. Propagation is by seed sown in April or May and germination takes approximately four weeks. Ripe seed should be harvested in the winter (June/ July).

***Elegia capensis* (besemriet)** This is a very attractive species that grows to a height of 2m. They grow in clumps or tussocks that have a spread of 1.5m. This species has slender branches arranged in whorls at the nodes. This gives an appearance rather similar to *Equisetum* (horsetails), and they were in fact originally described as horsetails. They produce golden brown flowers in spring and flower for about 3 weeks from October to November. Seeds ripen in late summer from January to February and are contained in dark-brown seed heads. In the wild this species is common along streams and seepages in the mountain fynbos from Clanwilliam in the Western Cape to Uitenhage in the east. It is fast growing and plants can reach a height of 1m in the first year after sowing. It is one of the few species that has long been available from nurseries – possibly because its seed germinates readily.

Below left: *Calopsis paniculata*

Below right: *Elegia stipularis*

Opposite: *Ischyrolepis  
subverticillata*

### New restios with horticultural potential

These species have become available in large quantities for the first time and are available from Kirstenbosch for commercial cultivation and from the Kirstenbosch Garden Centre.



***Calopsis paniculata*** A tall-growing species, 1.75 to 2.5m tall, spreading to form large groups of finely branched stems. The flowering period is in autumn. Female plants have small, snowy white flowers, but the male inflorescences are less showy. The mature stems can be used for foliage in the cut-flower industry. The plants prefer full sun, but can also be planted in light shade. This species grows naturally in or near stream beds and needs regular watering.

***Elegia stipularis*** Plants grow to a height of 0.5m with a diameter of 0.75m. It is one of the more attractive smaller restios and forms a dense mass of thin, finely-branched stems with pinkish golden bracts fading to light brown. It requires full sun and a well-drained soil.





*Ischyrolepis subverticillata* This species occurs naturally in the Betty's Bay area, where it grows in sunny positions in seasonally wet river-beds. Plants may be found as close as 50m from the sea to positions in light shade along small streams high up in the Kogelberg Nature Reserve. It is thus a plant for full sun or semi-shade, sandy, well-drained soils

and preferably moist situations. Mature plants form large clumps 2m high and 3m in diameter and can be used as accent plants or in groups. It produces small greenish yellow flowers in March, which develop into beautiful shiny speckled grey nutlets in October. Their decorative value lies in their dark green feathery foliage which is used in the cut-flower industry.

Below left: *Restio multiflorus*

Centre: Background *Rhodocoma capensis*, foreground, *Restio festuciformis*

Opposite left: *Thamnochortus cinereus*

Opposite right: *Thamnochortus pellucidus*



*Restio festuciformis* This species occurs on the hills and lower mountains between Bredasdorp and Somerset West. The plants are often found growing along stream banks and in damp places and may form large golden brown sheets in marshy areas. Together with the dark-brown *Elegia cuspidata* and the finer *E. filacea* they look like a richly-shaded wheat field rippling in the wind. The plants are fast-growing, often reaching maturity and flowering in the first year after planting. Their pattern of growth provides

a changing picture throughout the year. The plants have bright green stems that produce inflorescences with golden brown bracts in September, maturing into dark brown seed heads in November. The new cycle of bright green stem growth follows shortly afterwards. The mature plants grow up to 0.4m high and 0.6m in diameter and are most suitable for planting in groups of three or more. Plants in cultivation at Kirstenbosch have only had a relatively short lifespan and have needed to be replaced after 3 to 4 years.

*Restio multiflorus* This species occurs in the mountains of the western Cape from Piketberg to Bredasdorp and is also





endemic to Kirstenbosch. It reaches a height of 1.75m with a diameter of 1m. The young plants are decorative with large numbers of bright green sterile juvenile stems. After one or two years the fertile stems rise like a fountain out of the centre of the plant. The female plants produce a mass of small white flowers while the

male plants produce golden brown inflorescences. Individual plants can be used as accent plants or they may be planted in groups for a textured effect.

*Thamnochortus cinereus* This species occurs naturally in well-drained habitats in the wet mountains from Swellendam to Humansdorp. It is one of the most strikingly colourful restios with its many grey green sterile side shoots and rich golden brown flowers. From May to September flowering stems rise up above the foliage with large grass-like inflorescences. The male plants produce large silvery gold tassel-like flowers that stay decorative for at least 3 months. The plants grow to a height of 1m



with a diameter of 1m and can be used very successfully both as accent plants and in small groups, especially amongst rocks.

*Thamnochortus pellucidus* Plants grow up to 0.6m high, are compact tufted plants with thin green fertile stems rising up from a dense circle of finely divided infertile stems. Inflorescences are pale golden brown and provide a show for about 4 months. It is one of the most attractive small restios.

# RESTIOS IN CULTIVATION: A SUMMARY OF CHARACTERISTICS

(Adapted from Hitchcock and Jamieson 1998)

| Botanical Name                      | Common name                | Average height | Planting distance | Suitability for growing in containers | Suitability for coastal conditions | Soil pH tolerance (acidic/alkaline) | Structural plants suitable for landscaping | Wet loving |
|-------------------------------------|----------------------------|----------------|-------------------|---------------------------------------|------------------------------------|-------------------------------------|--|------------|
| <i>Calopsis paniculata</i>          | besemgoed                  | 2m             | 1m                | no                                    | no                                 | acidic                              | yes  | yes        |
| <i>Chondropetalum aggregatum</i>    | hermanus riet              | 1.5m           | 1m                | yes                                   | no                                 | acidic                              | yes  | yes        |
| <i>Chondropetalum tectorum</i>      | weskaapse dakriet          | 1.5m           | 1-2m              | yes                                   | yes                                | both                                | yes  | yes        |
| <i>Elegia capensis</i>              | fonteinriet                | 2m             | 2-3m              | no                                    | no                                 | acidic                              | yes  | yes        |
| <i>Elegia cuspidata</i>             | blombiesie                 | 1m             | 1m                | no                                    | yes                                | acidic                              | no   | yes        |
| <i>Elegia racemosa</i>              | rustling reed fluisterriet | 1.75m          | 1m                | no                                    | ?                                  | acidic                              | no   | seasonal   |
| <i>Elegia stipularis</i>            | cushion restio             | 0.5m           | 0.5m              | yes                                   | yes                                | both?                               | no   | seasonal   |
| <i>Ischyrolepis subverticillata</i> | besemriet                  | 1.5m           | 1-1.5m            | yes                                   | ?                                  | acidic                              | yes  | yes        |
| <i>Restio brachiatus</i>            | stroompies-riet            | 1.5m           | 1m                | no                                    | ?                                  | acidic                              | no   | seasonal   |
| <i>Restio festuciformis</i>         | groengrasriet              | 0.4m           | 0.3m              | no                                    | no                                 | acidic                              | no   | yes        |
| <i>Restio quadratus</i>             | vlakriet                   | 1.75m          | 1m                | no                                    | ?                                  | acidic                              | no   | seasonal   |
| <i>Rhodocoma arida</i>              | droogriet                  | 2m             | 1m                | no                                    | possibly                           | acidic                              | no   | seasonal   |
| <i>Rhodocoma foliosa</i>            | langeberg-riet             | 1.75m          | 1-1.5m            | yes                                   | ?                                  | acidic                              | yes  | seasonal   |
| <i>Rhodocoma gigantea</i>           | dekriet                    | 2-3m           | 1m                | no                                    | ?                                  | acidic                              | no   | seasonal   |
| <i>Thamnochortus cinereus</i>       | silver reed/ silverriet    | 1m             | 0.5-1m            | yes                                   | protected areas                    | acidic                              | no   | yes        |
| <i>Thamnochortus insignis</i>       | albertina dekriet          | 2m             | 2m                | no                                    | yes                                | both                                | yes  | seasonal   |
| <i>Thamnochortus pellucidus</i>     | dwergriet                  | 0.6m           | 0.5m              | yes                                   | yes                                | both                                | no   | no         |

| Where found growing naturally in South Africa |                |  |
|---|----------------|--|
| Dry loving                                    | Frost tolerant |  |
| seasonal                                      | ?              | Along streams from Cederberg to south of Durban  |
| seasonal                                      | ?              | Mountains – Cape Town, Worcester to George   |
| seasonal                                      | yes            | Coastal forelands, preferring marshy habitats, Grahamstown to Clanwilliam              |
| no  | no             | Large stands in wet seeps or along streams, Uitenhage to Clanwilliam                   |
| seasonal                                      | ?              | Marshy or dry sandy areas, coastal hills and mountains from south Peninsula to Caledon |
| seasonal                                      | ?              | Steep slopes on mountains between 600-1800m, Cape Town to Uniondale                    |
| seasonal                                      | ?              | Well-drained sandy soil areas, Peninsula to Mossel Bay                                 |
| seasonal                                      | ?              | Mountains, along streams, in half-shade, Caledon to Paarl                              |
| yes   | ?              | Inland mountains from Ceres to Swartberg   |
| seasonal                                      | ?              | Hills and lower mountain slopes, damp areas, Somerset West to Bredasdorp               |
| seasonal                                      | ?              | Peninsula to Worcester and Caledon   |
| yes   | ?              | Margins of Little Karoo – northern slopes of Langeberg, southern slopes of Swartberg   |
| yes   | ?              | Southern slopes of Langeberg and Swartberg   |
| yes   | ?              | Seaward side of Langeberg, Outeniqua and Tsitsikamma mountains                         |
| seasonal                                      | ?              | Well-drained areas on wet mountains, Swellendam to Humansdorp, sea level-1000m         |
| yes   | yes            | Coastal sandy flats and limestone hills, Bredasdorp to Mossel Bay                      |
| yes   | ?              | Well-drained sandy areas, coastal forelands, Gordons Bay to Bredasdorp                 |



# KIRSTENBOSCH SEEDS AND SEED PRIMER BY MAIL ORDER

## Product

Limited quantities of seeds of South African restios are available by mail order

## Available from:

Kirstenbosch Seed Room, South African National Biodiversity Institute, Private Bag, X7, Claremont, Cape Town, 7735, South Africa.  
(Phone: +27 21 799 8899  
(Fax: +27 21 762 8239).  
email: seedroom@nbi.ac.za

Packets of 'Kirstenbosch Smoke-Plus' seed primer, are available by mail order  
(One packet is sufficient to treat 500 large seeds.)

Kirstenbosch Seed Room, South African National Biodiversity Institute, Private Bag, X7, Claremont, Cape Town, 7735, South Africa.  
(Fax: +27 21 762 8239)  
email: seedroom@nbi.ac.za

Kirstenbosch Garden Centre  
(Phone: +27 21 7971305)  
(Fax: +27 21 797 0507)

Botanical Society Bookshop  
Kirstenbosch Visitor Centre  
(Phone: +27 21 762 1621)  
Fax: +27 21 762 0923  
email: kbranch@botanicalsociety.org.za



## AVAILABILITY OF RESTIO PLANTS

Plants of some of the restio species mentioned in this book and others are available from:

The Kirstenbosch Garden Centre  
at Kirstenbosch, Cape Town.  
(Phone. +27 21 797 1305)  
(Fax. +27 21 797 0507)

## FURTHER READING

- Brown, N.A.C., Jamieson, H. and Botha, P.A. (1994). Stimulation of seed germination in South African species of Restionaceae by plant-derived smoke. *Plant Growth Regulation* 15: 93-100.
- Brown, N.A.C., Jamieson, H. and Hitchcock, A. (1996). Conservation through cultivation. *The Garden, Journal of the Royal Horticultural Society* 121 (5): 265-267.
- Brown, N.A.C., Van Staden, J. and Brits, G.J. (1996). Propagation of Cape Proteaceae, Ericaceae and Restionaceae from seed. *Combined Proceedings of the International Plant Propagator's Society* 46: 23-27.
- Brown, N.A.C. and Botha, P.A. (1997). Smoking them out. *The Horticulturist, Journal of the Institute of Horticulture, London* 6 (1): 2-6.
- Brown, N.A.C. and Botha, P.A. (2004). Smoke seed germination studies and a guide to seed propagation of plants from the major families of the Cape Floristic Region, South Africa. *South African Journal of Botany* 70: 559 – 580.
- Brown, N.A.C., van Staden, J., Daws, M.I. and Johnson, T. (2003). Patterns in the seed germination response to smoke in plants from the Cape Floristic Region, South Africa. *South African Journal of Botany* 69: 514 – 525.
- Haaksma, E.D. and Linder, H.P. (2000). *Restios of the Fynbos*, Botanical Society of South Africa, Cape Town.
- Hitchcock, A. and Jamieson, H. (1998). *Gardening with restios*. Information pamphlet, Kirstenbosch National Botanical Garden. 2 pp.
- Jamieson, H. and Brown, N.A.C. (1994). The restio garden at Kirstenbosch. *Veld and Flora* 80 (4): 124-125.
- Linder, H.P. (1991). A review of the Southern African Restionaceae. *Contributions from the Bolus Herbarium* 13: 209-264.
- Linder, H.P. (2002). *The African Restionaceae*, CD-ROM. Contributions from the Bolus Herbarium, University of Cape Town. Vol.20.



# INDEX

Page numbers in italics  
denote illustrations.

*Askidiosperma andreaeanum*  
6, 15

*esterhuyseniae* 15

*paniculatum* 15

bergbamboes see

*Cannomois virgata*

besemriet see *Elegia*

*capensis*

broom manufacture 11

*Calopsis paniculata* 5, 11, 15,  
16, 18, 24, 28-29

*Cannomois parviflora* 15

*virgata* 6, 9, 11, 12, 13, 15,  
16, 21

Cape Floristic Region 5-6

*Ceratocaryum argenteum* 11,  
15, 28-29

*Chironia laxa* 19

*Chondropetalum ebracteatum*  
15

*hookerianum* 15

*mucronatum* 15

*tectorum* 5, 11, 12, 13, 15,  
18, 19, 20, 21-23, 28-29

common names 28-29

companion plants 19

containers 19, 28-29

cultivation of restios 17-19,  
28-29

dakriet see *Chondropetalum*  
*tectorum*

dekriet see *Thamnochortus*  
*insignis*

*Dovea macrocarpa* 15

economic uses 11

*Elegia capensis* (cover) 10,  
15, 16, 18, 22-23, 28-29

*cuspidata* 15, 16, 18, 26,  
28-29

*equisetacea* 12, 13, 15

*fenestrata* 15

*filacea* 15, 26

*grandis* 15

*persistens* 2-3, 6, 8, 15

*racemosa* 6, 28-29

*stipularis* 8, 11, 15, 24,  
28-29

fertilizer 17-18

fynbos 5

*Geranium incanum* 19

germination see seed  
germination

*Helichrysum cymosum* 19

*Hypodiscus neesii* 15

*striatus* 15

identification 21

*Ischyrolepis gaudichaudiana*  
11

*occreata* 15

*sieberi* 15

*subverticillata* 11, 15, 24,  
28-29

Kirstenbosch Garden Centre  
10, 24, 30

Kirstenbosch Restio Garden  
2, 9-10

*Limonium perigrinum* 19

maintenance 18-19

mulching 18

*Pelargonium betulinum*  
(cover), 19

plant-derived smoke see  
smoke

planting

companion plants 19

container 19

season 17

*Plecostachys serpyllifolia* 19

propagation

seed 13

vegetative 13

*Restio bifarius* 11, 15

*brachiatus* 15, 19, 28-29

*dispar* 14, 15

*festuciformis* 9, 15, 16, 18,  
26, 28-29

*multiflorus* 26-27

*pachystachyus* 15

*quadratus* 28-29

*similis* 15

*tetragonus* 15

*triticeus* 15

Restionaceae 5-6

*Rhodocoma arida* 15, 28-29

*capensis* 2, 15, 26

*foliosa* 4, 28-29

*fruticosa* 15

*gigantea* 4, 12, 15, 28-29

Rycroft Gate, Kirstenbosch 10  
seed

dormancy 9

germination 6, 14-15

primer 14-15, 30

size 12, 13, 15

seeds 12, 30

smoke 6, 14-15, 17, 30

soil conditions 5, 28-29

*Staberoha aemula* 15

*cernua* 15

*distachyos* 15

*vaginata* 15, 20

*Thamnochortus bachmannii*  
15

*cinereus* 4, 6, 15, 27,  
28-29

*insignis* 5, 6, 11, 12, 18,  
22-23, 28-29

*lucens* 9

*pellucidus* 15, 19, 27,  
28-29

*platypteris* 15

*punctatus* 15

*spicigerus* 11 15

*sporadicus* 15

thatching 6, 11

thatching reed see

*Thamnochortus insignis*

vegetative propagation see  
propagation

watering 17-18

*Willdenowia incurvata* 15

wildflower industry 11

Winter, John 6

582.554  
BRO

8244



SOUTH AFRICAN

national  
biodiversity  
institute

S A N B I

Cover picture: A display bed in the  
Kirstenbosch Restio Garden with  
Table Mountain in the background

Inset: The attractive bracts of  
*Elegia capensis*

### Kirstenbosch Gardening Series

*Grow Proteas*

*Grow Agapanthus*

*Grow Restios*

*Grow Cycads*

*Grow Succulents*

*Grow Clivias*

*Grow Bulbs*

*Grow Nerines*

